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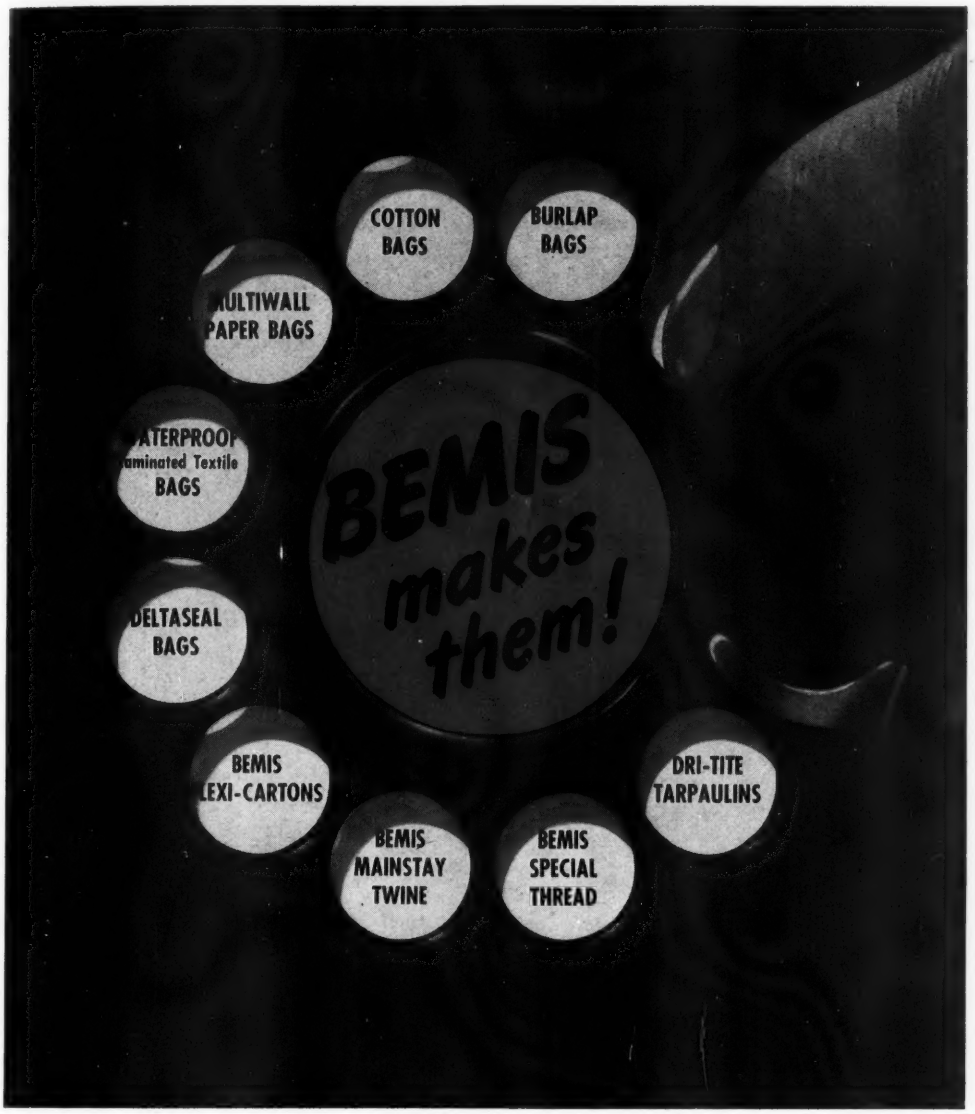

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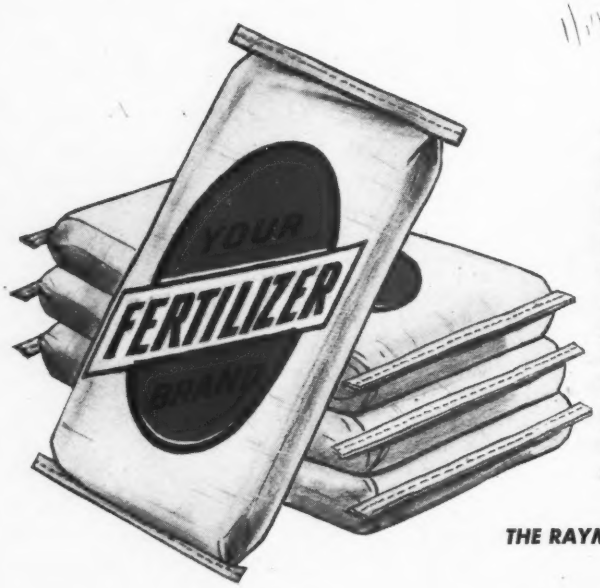

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The American FERTILIZER

Vol. 111 OCTOBER 15, 1949 No. 8

The Fertilizer Situation, 1949-50

Report prepared by the Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

The domestic fertilizer supply during 1949–50 is expected to show a substantial increase over 1948–49, which established another high record with respect to fertilizers for agriculture in the United States. With orderly movement throughout the year, supplies should be more sufficient to meet demands than at any time during the past several years.

In the light of currently available information, the 1948–49 supply of plant food comprised about 1,005,000 tons of nitrogen (N); 1,910,000 tons of available phosphoric acid (P_2O_5); and 1,025,000 tons of potash (K_2O).[1] The combined total of 3,940,000 tons exceeds 1947–48 reported consumption of plant food by some 300,000 tons. During 1949–50 these quantities could be exceeded: For nitrogen by 15 to 25 per cent; for available phosphoric acid by 10 to 15 per cent or more; and for potash by about 10 per cent.

Nitrogen (N)

Of the 1,005,000 tons of fertilizer nitrogen representing the 1948–49 supply for the United States and possessions, it is estimated that some 600,000 tons were derived from synthetic ammonia produced at commercial plants (including the TVA plant at Muscle Shoals). About 58,000 tons, including approximately 31,000 tons for the commercial export program, were supplied from ammonia produced at plants operated by or for the Department of the Army. By-product ammonia accounted for some 175,000 tons and natural organic materials an estimated 30,000 tons. Commercial imports totaled about 204,000 tons and commercial exports were about 62,000 tons, resulting in a net import balance of some 142,000 tons.

Various components of the synthetic nitrogen industry and importers of nitrogenous fertilizer materials have co-operated in supplying special information on U. S. deliveries during the 1948–49 year. On the basis of such information and available data on production at by-product plants, it has been possible to classify the 1948–49 fertilizer supply by type and source of material. (*Table 1*).

Approximately 68 per cent of the 1948–49 nitrogen supply was in solid and 32 per cent in liquid forms. Of the former, approximately 70 per cent represented domestic production and 30 per cent imports. Except for a small quantity received from Norway, the 1948–49 imports were roughly of one-half Chilean and one-half Canadian origin.

Commercial exports of nitrogenous fertilizer during 1948–49 were approximately 62,000 tons of nitrogen. In addition to supplying one-half of these exports, the Department of the Army was also required by law to provide 10 per cent of its output of anhydrous ammonia to the domestic civilian economy.

Commercial imports and exports of nitrogenous fertilizer in 1948–49 were established under agreements reached within the International Emergency Food Committee. The fertilizer allocation functions of this committee became inoperative as of June 30, 1949. Exporting countries accordingly are no longer subject to IEFC limitations with respect to

[1] Throughout this statement all quantities are expressed in tons of 2,000 pounds and are calculated on the basis of $N—P_2O_5—K_2O$ content of product.

quantities supplied to the United States. Commercial exports of nitrogenous fertilizers from the United States during 1949–50 will be on a voluntary basis. It is intended that the quantity exported will be limited in such manner as to assure adequate supplies for U.S. farmers.

TABLE 1

U.S. FERTILIZER NITROGEN SUPPLY FOR 1948–49

Type and Source	*Tons Nitrogen*
Ammonium nitrate, 32.5% N plus	
Domestic	127,000
Imported	41,000
Total	168,000
Ammonium sulphate, 20.5% N	
Domestic, by-product	171,000
Domestic, synthetic	55,000
Imported	16,000
Total	242,000
Nitrogen compounds, other	
Domestic sodium nitrate, ammonium phosphate, ammonium nitrate-lime, urea mixtures	93,000
Imported calcium cyanamid, ammonium phosphate, calcium nitrate	41,000
Total	134,000
Sodium nitrate	
Imported	106,000
Natural organics	
Domestic and imported	30,000
Total solid nitrogen	680,000
Ammoniating liquors	
Nitrogen solutions: ammonia nitrate-ammonia and urea-ammonia	240,000
Ammonia for ammoniation, anhydrous and aqua	30,000
Total	270,000
Ammonia for direct application	
Anhydrous and aqua and ammonium nitrate water	55,000
Total liquid nitrogen	325,000
Grand total	1,005,000

In the United States a rather sizeable increase has taken place in the capacity of private concerns to produce synthetic ammonia. In addition, the production capacity of some 120,000 tons of synthetic ammonia at Army-owned facilities is expected to be available for civilian use during 1949–50.

The 1949–50 production of by-product ammonia compounds is not expected to exceed 1948–49 output and perhaps will be somewhat less. On the other hand, ample synthetic ammonium sulphate converting capacity is available to process such quantities of anhydrous ammonia as may be economically feasible to utilize for this purpose.

An estimate made earlier in 1949 indicated that at least 120,000 tons of additional nitrogen might be in prospect for U.S. farmers during the 1949–50 season as compared with the then estimated 1948–49 supply. Since that time, several developments, including decisions with respect to the Department of the Army and the Economic Co-operation Administration export programs and the action taken regarding the release of a substantial part of the Cactus Ordnance Works' ammonia output, have tended to move the potential 1949–50 increase upward.

On the basis of an analysis of available domestic plant capacity and assuming net commercial imports equal at least to the previous year, the 1949–50 supply of fertilizer nitrogen could easily exceed the 1948–49 supply of slightly more than a million tons by some 150 to 250 thousand tons. Achievement of such increase depends upon several factors, including the general level of national economy and farmer purchasing power. Another factor is that maintenance of high levels of production at many plants depends upon regular movement to trade outlets.

Phosphates (P_2O_5)

During 1948–49, according to reports to the Bureau of the Census from 182 plants, production of normal superphosphate and wet base goods totaled 1,638,000 tons available phosphoric acid (P_2O_5) content and concentrated superphosphate approximately 224,000 tons P_2O_5 basis.

Stocks of normal superphosphate on hand as of July 1, 1948, were reported at approximately 215,000 tons P_2O_5 basis, and on June 30, 1949, at 137,000 tons, a net decrease during the period of 78,000 tons. Stocks of concentrated superphosphate increased approximately 13,000 tons P_2O_5 basis from about 22,000 tons on July 1, 1948, to 35,000 tons on June 30, 1949. Stocks of wet base goods

(Continued on page 24)

Phosphorus Aids Human Health

Importance of Adequate Supplies of Phosphorus in Agriculture to Safeguard Animal and Human Health

By Vincent Sauchelli
Director of Agricultural Research, The Davison Chemical Corporation, Baltimore, Md.

DO YOU know that a person weighing about 170 pounds contains roughly 1¼ pounds of phosphorus in his body? Or that a 1000-pound steer contains about 7½ pounds? About three quarters of one per cent of the total phosphorus is in the skeleton. But that other 15 per cent which is in the soft tissues is a precious bit. Without it normal growth, health, reproduction—in fact, life as we know it would be impossible.

What Phosphorus Does

Because of its vital importance, phosphorus has received a lot of attention from biochemists and physiologists. Hence its functions in the body have been pretty well mapped out. Of the thirteen known mineral elements essential to animal life, phosphorus takes part in more chemical reactions and forms more compounds than any of the others. Combined with calcium, it gives strength to bones and bones make it possible for one to talk and to move about.

Every cell in the body has some phosphorus, most of it being in the nucleus, the governor of the cell. All muscle and gland tissues contain phosphorus. In the soft tissues it is an essential part of the protein compounds, called phosphoproteins, which apparently sparks muscles into action. Phosphorus, chiefly as phosphoric acid, is necessary in the process of absorbing sugars from the intestines, and the transformation of glycogen into lactic acid depends upon this element. We could not do work if phosphorus were not present in the body to stimulate the burning or oxidation of sugars to give us energy. The digestion of food fats depends upon phosphorus. We could list many more essential services performed by phosphorus. Enough has been given to highlight its very essential role in the life process.

"Key to Life"

Phosphorus has been called "the key to life." The word itself literally means "carrier of light." If, as some physiologists reason, the single cell represents the simplest expression of life, it therefore may be considered the center of life. Since the living cell cannot function without phosphorus, it follows that in disease conditions of the body, one of the primary causes is in the relationship of phosphorus to the fundamental, normal life of the cell. An adult needs about 1.5 to 3 grams of phosphorus daily, or roughly about 0.1 ounce. It is commonly known that mental work uses up a relatively larger supply of phosphorus than muscular activity. Hence it is that when, working hard mentally, a person eliminates large amounts of phosphoric acid in the urine. Perhaps this observation has led to the common belief that food, such as fish, rich in phosphorus is good for brain workers. Phosphorus and magnesium form an essential part of the sex glands. The pure ash of human sperm contains an average of about 53 per cent of phosphoric acid (P_2O_5) and about 25 per cent of magnesium oxide.

Work

The red blood cells are rich in organic acid-soluble compounds of phosphorus. We have phosphorus both in the plasma and in the blood cells. One of the latest theories on the occurrence of rickets is that it is due to a decrease of phosphorus in the plasma.

In the body phosphorus flows in the blood stream in the form of inorganic phosphoric acid. Normally this flow of phosphorus is sufficient to serve the various needs of the soft tissues and the general metabolism. Ordinarily the amount is also sufficient to supply all the requirements of bone-making without stinting on the needs of other tissues.

Investigators report that an adequate supply of phosphoric acid in the diet will help workers maintain a high rate of efficiency, especially among those who work with brawn as well as brain. The role of phosphorus is to convert into mechanical labor a larger proportion of the energy developed. Miners in some countries add phosphate to their drinking water and this tends to reduce the desire to drink a lot of water. It is claimed that phosphate in the drinking water reduces perspiration which in turn decreases thirst.

(Continued on page 22)

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Vol. 111 OCTOBER 15, 1949 No. 8

Principal Articles in This Issue

Unique Control Chamber Built for Growth Studies

Some of the most pampered corn plants in the world will be growing this winter at the Connecticut Agricultural Experiment Station, where a new and unique control room has just been constructed for growth studies.

Designed largely by Walton C. Galinat of the Station's Genetics Department, the new room was built to help answer the question, "What causes flowering in plants and can man control it?" If man could set the time when a crop is to mature, the advantages would obviously be great.

Environment in the control room is a far cry from the haphazard conditions in which plants normally grow. Length of daylight hours, temperature, humidity and nutrition will all be rigidly controlled.

It is known that all of these four factors—length of day in relation to the number of hours of darkness, temperature, humidity, and the kind and amount of food received—have some bearing. By making it possible to regulate these factors and vary them at will, the new control room should yield some valuable answers concerning the role and relative importance of each in plant growth.

All walls of the room, which is located beneath the ground, are flank so that no outside light is allowed to enter. The room itself is divided into four long, narrow chambers, each containing a stand on which a shallow trough is placed. Corn plants will be grown in gravel culture in these troughs, so that the amounts of potash, phosphorus and nitrogen, the three essential plant food elements which the plants receive, can be controlled with the highest degree of accuracy.

Above each stand is a long battery of daylight fluorescent tubes, each of which is controlled by a time clock. Plants can thus be grown in continuous light, continuous darkness, or any combination between. Spring or fall growing conditions, or growing conditions in any part of the world, can easily be simulated. When the battery of lights is turned off, the room is in absolute darkness.

The degree of warmth and moisture in the room atmosphere can likewise be controlled absolutely. The room is the fifth of its kind to be constructed. Other similar control laboratories are in operation at the U. S. Department of Agriculture Research Center at Beltsville, Md., Harvard University, Boyce Thompson Institute and California Institute of Technology.

Fertilizer Control Officials Hold Annual Meeting

The third annual meeting of the Association of American Fertilizer Control officials was held at the Shoreham Hotel, Washington, D. C. on October 7th. The registration showed an attendance of 114.

The main topic of discussion which was emphasized by B. D. Cloaninger, president of the Association, was the effect of proposed national fertilizer control legislation, such as the Lemke and Keefe bills introduced in Congress, on the work of state control officials in the enforcement of the various state fertilizer laws.

Talks were made by Russell Coleman, president of the National Fertilizer Association and by Clifton A. Woodrum, president of the American Plant Food Council, who stressed the increasing cooperation between officials and manufacturers in seeing that the farmer received the fertilizers best formulated to his crops and soils.

Other speakers were J. B. Douthit, president of the South Carolina Association of Soil Conservation Supervisors, G. W. Michael, of Ottawa, Canada; L. G. Porter and A. L. Mehring of the U. S. D. A. and L. W. Kephart, U. S. D. A. who reviewed the dangers of mixing insecticides and other poisons with fertilizers until further research has established what can and what cannot be done in this field.

Officers elected for the coming year were J. B. Smith, State Chemist of Rhode Island, *presiden';* R. C. Berry, Chief Chemist of Virginia, *vice president;* B. D. Cloaninger, head of Fertilizer Inspection, South Carolina, *secretary-treasurer.*

The Executive Committee will be composed of J. L. St. John, State Chemist, Washington, *Chairman;* J. W. Kuzmeski, Official Chemist, Massachusetts; Bruce Poundstone, head of Fertilizer and Feed Dept., Kentucky; H. A. Halverson, Chief Chemist, Minnesota; P. A. Yeats, head of Seed and Feed Division, Oklahoma; and Past President B. D. Cloaminger, ex-officio.

The control officials were entertained at a dinner by the American Plant Food Council on October 7th and at a dinner by the National Fertilizer Association on October 10th.

W. A. Queen to Head A. O. A. C.

At the annual meeting of the Association of Official Agricultural Chemists in Washington, D. C., on October 10th, 11th, and 12th, W. A. Queen, Chief of the Division of State Cooperation of the U. S. Food and Drug Administration, was elected president for the coming year. Other officers chosen were: H. A. Halverson, head of Fertilizer Control of Minnesota, vice-president; W. B. White, U. S. Food and Drug Administration, H. J. Fisher, Chief Chemist, Connecticut, and E. L. Griffin, Insecticide Division, U. S. D. A., members of the Executive Committee. The retiring president, L. S. Walker, of Vermont, becomes ex-officio a member of the Executive Committee.

Among the various reports and papers presented were a number dealing with the

Photo by National Fertilizer Association

Dinner given by the Chemical Control Committee of the National Fertilizer Association to leading federal and state fertilizer control officials at the Mayflower Hotel, Washington, October 10, 1949

preparation of fertilizer samples and methods of analysis for the various plant food elements in fertilizer materials.

At the close of the meeting, the members of the association were guests at a dinner given in their honor by the Chemical Control Committee of the National Fertilizer Association.

Program for N. F. A. Fall Meeting

A delegation of British fertilizer industry executives will participate in the program of the National Fertilizer Association at its fall meeting in Atlanta, Ga., on November 14th, 15th and 16th. The sessions will be held at the Atlanta Biltmore Hotel.

The first day of the convention will be devoted to meetings of the board of directors and of other Association committees.

The general session on Tuesday, November 15th, will include talks by F. W. Parker, assistant chief, Bureau of Plant Industry and Soils, U. S. D. A., and by William L. Padgett, of the Economic Cooperation Administration. Mr. Padgett will describe the technical assistance rendered by E. C. A. to European business and industry. He will be followed by one of the British delegation, who will discuss British fertilizer problems.

Also scheduled tentatively for the Tuesday session is the premiere of the motion picture "New England's Green Pastures," now being produced by agricultural and industrial leaders of that section with the assistance of the N. F. A. staff.

The annual industry dinner will be held on Tuesday evening at the Atlanta Biltmore Hotel, convention headquarters.

The program on Wednesday, November 16th, will feature W. R. Thompson, extension pasture specialist of Mississippi State College, and John L. Liles, Jr., agricultural economist, Federal Reserve Bank of Atlanta, as speakers. They will be followed by a panel discussion on telling the soil improvement story. Panel members are Channing Cope, author-farmer, chairman; Alexander Nunn, managing editor, *The Progressive Farmer*; L. R. Neel, editor, *Southern Agriculturist*; and James M. Eleazer, information specialist, Clemson Agricultural College.

Hotel reservations should be made directly with the hotel management. Members planning to attend are asked to notify the Association office in Washington, so that name badges can be prepared in advance of the meeting.

August Superphosphate Production

The U. S. Bureau of Census figures show that production of all types of superphosphate increased from 829,083 tons (basis 18% A.P.A.) in July to 876,802 tons in August. This is about 35,000 tons ahead of August, 1948.

During August, about 786,000 tons was shipped to mixers or was used in the producing plants. This increased stocks on hand at the end of August to about 1,250,000 tons, which compares with about 1,400,000 tons on hand on August 31, 1948.

For the period from January to August, production totaled approximately 7,180,000 tons which is about 70,000 tons behind the output for the same period of 1948.

	Normal 18% A.P.A.	*Concentrated 45% A.P.A.*	*Base-goods 18% A.P.A.*
Production	*Tons*	*Tons*	*Tons*
Aug., 1949.....	742,194	51,918	4,813
July, 1949.....	706,489	47,782	3,139
Aug. 1948.....	731,396	42,094	4,643
Shipments and used in producing plants			
Aug. 1949.....	658,201	50,785	1.016
July, 1949.....	552,729	31,562	378
Aug. 1948.....	769,449	38,205	1,465
Stocks on hand			
Aug. 31, 1948...	1,014,337	92,271	10,332
July 31, 1948...	927,539	91,138	6,535
Aug. 31, 1948...	1,220,788	69,635	8,291

FERTILIZER MATERIALS MARKET

NEW YORK

Effects of Steel Strike Not Felt to Date on Sulphate of Ammonia Market, but Spot Material May Be Short. Supplies of Other Chemical Nitrogen Materials Adequate. Superphosphate Producers Handicapped by Lateness of Shipping Instructions from Mixers.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, October 13, 1949.

Sulphate of Ammonia

While no effect has been felt so far on the market, due to the coal and steel strike, principally because it is not the active fertilizer mixing season, it is thought that sooner or later supplies for quick shipment will be difficult to find. No price changes have been noted.

Nitrate of Soda

While no price changes have been made so far in this material, it has been hinted several times recently the price might be reduced but this is without confirmation. Stocks are adequate at most shipping points at the present time.

Ammonium Nitrate

Production has been increased at several plants and shipments are being made to regular buyers. No price changes were noted.

Nitrogenous Material

Some producers are sold out for nearby months and demand continues good from most sections with no change in prices.

Castor Pomace

This material is in excellent demand and producers are not taking any new orders but are shipping on old contracts at the current price of $24.00 per ton, f.o.b. production points. One small producing plant has been placed on the market for sale, due to lack of demand for castor oil.

Organics

Organic fertilizer markets displayed a firm tone and tankage and blood moved as produced, mostly into feeding channels. Last sales of tankage and blood were made at $10.00 per unit of ammonia ($12.15 per unit N), f.o.b. Eastern shipping points, with the market well cleaned up. Soybean meal was stronger and material for quick shipment was sold at $72.00 per ton in bulk, f.o.b. Decatur, Ill., with future months quoted at a discount. Linseed meal moved along in good volume and some producing plants were sold out for the nearby months, with last sales at about $65.00 per ton in bulk, f.o.b. Chicago. Cottonseed meal was also firm in price. Fertilizer buyers were not interested at present prices.

Fish Meal

With the fishing drawing to a close along the East Coast, the market remained firm at about $180 per ton, f.o.b. fish factories, for the ground menhaden meal. West Coast material appeared on the market but it is a little too late to have much effect on the Eastern market.

Bone Meal

While there has been some easing of the feed demand for bone meal recently, demand from fertilizer buyers continues to be excellent and supplies of the fertilizer grades seem difficult to locate.

Hoof Meal

There is continued demand from the fertilizer trade for this material with last sales made at $7.50 per unit of ammonia ($9.12 per unit N), f.o.b. Western production points.

Superphosphate

Producers are anxious to get shipping instructions from buyers on contracts but, due to the tardiness of farmers in ordering their fertilizer for the coming season, some buyers do not seem inclined to load up on this material. Shipments of triple superphosphate are continuing in a satisfactory manner.

Potash

No further word has been received from foreign sources of potash importations, due to recent currency devaluations. Meanwhile domestic producers are shipping against existing contracts and the demand is good from various sections of the country.

CHARLESTON

Seasonal Demand Continues with Supplies Adequate. Steel Strike Affects Production of By-Product Sulphate of Ammonia.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, October 10, 1949.

Demand for major fertilizer ingredients continues seasonal with supplies generally adequate to meet the demand.

Organics.—Organics continue to maintain their strength, with demand for castor pomace greater than supply and prices on nitrogenous tankage ranging from $3.50 to $4.00 per unit of ammonia, ($4.25 to $4.86 per unit N) depending on the shipping point. Imported nitrogenous tankage is around $4.25 to $4.35 per unit of ammonia ($5.16 to $5.29 per unit N) in bags, c.i.f. Atlantic ports.

Castor Pomace.—A limited quantity was recently sold for October shipment at $24.00 per ton in bags, f.o.b. northeastern production points, but supplies continue relatively scarce and producers well sold.

Dried Ground Blood.—Chicago market is around $10.75 per unit of ammonia ($13.07 per unit N) in bulk, f.o.b. Chicago area, with the New York market at around $10.50 ($12.76 per unit N). South American production is offered at around $9.25 per unit of ammonia ($11.24 per unit N), c.i.f. Atlantic port, in bags for fall shipment.

Potash.—Demand continues strong and in line with production. No change in prices has been reported.

Ground Cotton Burr Ash.—This excellent source of carbonate of potash continues at around 75 cents per unit of K_2O in bulk carload lots, f.o.b. Texas shipping point.

Phosphate Rock.—Market situation continues firm with demand good. Movement is steady to acidulators.

Superphosphate.—Production continues at a steady pace and at levels higher than the same period of last year, although the total for the first seven months of 1949 is approximately 100,000 tons behind the same period of 1948.

Sulphate of Ammonia.—Coke oven production continues at around $45.00 per ton in bulk, f.o b. steel mills, with synthetic production varying in price from around $45.00 to $48.00 in bulk, depending on the producer. The current steel strike, of course, has shut off movement from the steel mills recently, but buyers are pretty well stocked for the time being.

Ammonium Nitrate.—No change in prices has been noted from the domestic quotations of $58.00, f.o.b. production point, or $63.00 per ton in bags, f.o.b. Fort Robinson, Ontario.

Hoof Meal.—Imported hoof meal is offered at around $7.00 per unit of ammonia ($8.51 per unit N) in bags, c.i.f. Atlantic ports, for fall shipment. Chicago market continues at around $7.50 per unit of ammonia ($9.12 per unit N).

Nitrate of Soda.—Activity is quiet at the present and stocks adequate for current demand. No change in prices has been noted.

PHILADELPHIA

Ample Supplies of All Chemical Materials Reported Synthetic Sulphate of Ammonia Offsets Steel Strike Shortages

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, October 10, 1949.

The market remains seasonally quiet and lack of demand is beginning to be reflected in large surplus, particularly of nitrogen, now piling up. It is suggested that this may account for the languishing concern toward the present coal and steel strikes. It is conceded that some cutback in production might be advantageous.

Sulphate of Ammonia.—Market remains firm with no unusual demand. Production of synthetic grade continues far ahead of last year, and the overall supply is expected to be ample despite the coal and steel strikes.

Nitrate of Ammonia.—Production continues above last year and the demand remains normal.

Nitrate of Soda.—No unnatural developments for this season of the year are reported. Though no price changes are reported, there is a chance that the import price may be adjusted shortly.

Blood, Tankage, Bone.—Blood and tankage are somewhat stronger due to improved feeding trade demand. Both commodities are quoted at $10.00 per unit of ammonia ($12.15 per unit N). Bone meal continues scarce although some easementin the steamed feeding grade was discernible, and $75.00 per ton was quoted. Some little three and 50 per cent resale material was offered at $76.00 per ton.

Castor Pomace.—There seems to be no change in this situation. The production is still very short and shipments are against contracts.

Fish Scrap.—Production continues ahead of

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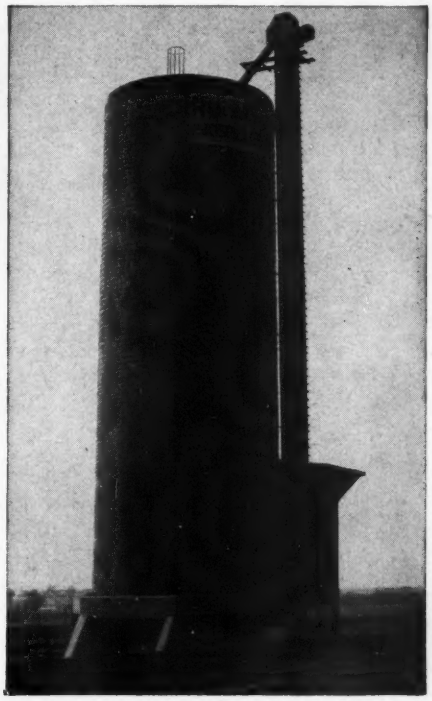

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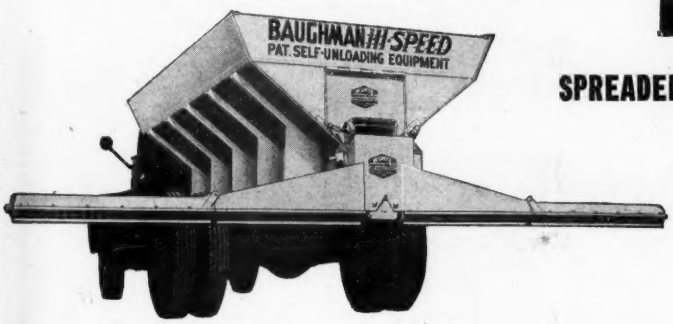

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last year and prices show a slight weakening tendency. Menhaden 60 per cent is quoted at $170.00 to $177.50.

Phosphate Rock.—Market is steady and demand fair. Shipments to acidulators are moving satisfactorily and stocks are quite ample to meet requirements. The Florida price advanced 10 cents per ton, due to increased costs of production.

Superphosphate.—No price changes are indicated. Movement is confined principally to contracts and supply is fully adequate for all requirements.

Potash.—Production continues to increase both here and in Europe, and supply is now well in excess of requirements.

CHICAGO

Recent Advances in Organics Market Maintained and Little Change Expected in Near Future

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, October 10, 1949.

There has been very little change in the market on animal ammoniates during the past two weeks. However, advances previously established have been well sustained and at present the market is quite firm at these levels. Attempts to obtain further advances have met with resistance and thus far the demand appears to be fairly well satisfied. Production is holding up pretty well and present indications are that prevailing levels will remain unchanged for the immediate future.

Meat scraps, 50 per cent protein, are listed at $115.00 to $120.00 per ton, and digester tankage at $130.00 to $135.00 per ton.

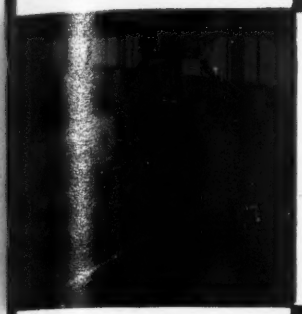
Dry rendered tankage is moving at $2.20 to $2.25 per unit of protein. Wet rendered tankage is quoted at $10.50 to $11.00 per unit of ammonia ($12.76 to $13.37 per unit N); dried blood at $10.75 per unit of ammonia ($13.07 per unit N). Steamed bone meal, 65 per cent, is steady at $65.00 to $70.00 per ton and raw bone meal, 4½–45 per cent, at $70.00 per ton.

October Cotton Report

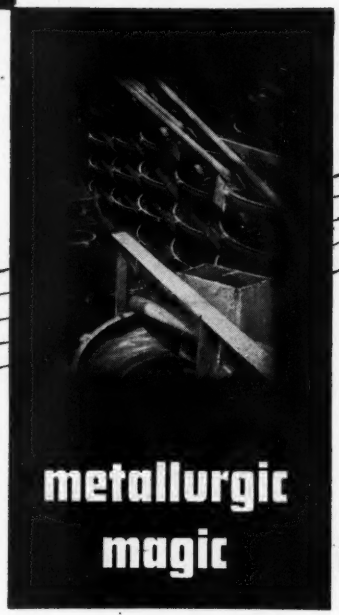
A cotton crop of 15,446,000 bales is forecast by the Crop Reporting Board of the Bureau of Agricultural Economics. The crop, as of October 1, is 503,000 bales, or over 3 per cent more than the September 1 forecast and 578,000 bales above last year's production. Increases in prospective production in Texas, Oklahoma and Arkansas more than offset declines in the Eastern cotton belt and New Mexico. Production in 1948 was 14,868,000 bales and the 10-year average 11,306,000 bales.

The lint yield per acre, computed at 286.2

State	Production (Ginnings) 500-lb. Average 1938–1947	Gross wt. 1948 Crop	Bales 1949 Crop Indicated Oct. 1
	Thous. bales	Thous. bales	Thous bales
Missouri	356	506	460
Virginia	22	24	21
N. Carolina	549	678	470
S. Carolina	716	871	550
Georgia	779	745	630
Florida	14	15	17
Tennessee	523	670	630
Alabama	901	1,197	865
Mississippi	1,588	2,353	1,460
Arkansas	1,329	1,982	1,670
Louisiana	528	756	630
Oklahoma	521	374	480
Texas	2,722	3,150	5,500
New Mexico	119	236	286
Arizona	174	328	460
California	447	968	1,300
Other States	16	15	17
United States	11,306	14,868	15,446



International Phosphates



metallurgic magic

increases tonnage, quality, and consistency of grade

Complex washing, sizing and beneficiating metallurgical processes, developed by *International's* research engineers, refine phosphate to the quality and consistent grade you require for *efficient, profitable manufacturing operations.* New phosphate mines and plants built by International provide greatly expanded production which assures *faster, more efficient* deliveries of your order, large or small. Look to *International* for the high grade phosphate you need to produce finer quality fertilizers and to give better service to your customers.

Florida Pebble Phosphate
ALL COMMERCIAL GRADES
Tennessee Phosphate

Mines and Plants in Florida at Noralyn, Peace Valley, Achan, Mulberry; in Tennessee at Mt. Pleasant and Wales

International Minerals & Chemicals

PHOSPHATE DIVISION • INTERNATIONAL MINERALS & CHEMICAL CORPORATION
GENERAL OFFICES: 20 NORTH WACKER DRIVE • CHICAGO 6

pounds, is 27 pounds below the record yield of 313.1 pounds per acre harvested last season and compares with the 10-year average of 254 pounds. This year, the indicated yield per acre is generally below average east of the Mississippi River and above average west of the river.

The Bureau of the Census reports 5,309,240 bales ginned from the crop of 1949 prior to October 1, compared with 5,305,456 bales for 1948 and 3,907,801 bales for 1947.

Larigan Appointed St. Regis Minneapolis Representative

John A. Larigan has been appointed sales representative of the St. Regis Paper Company's Multiwall Bag Division at Minneapolis, Minnesota, according to an announcement by Charles A. Woodcock, Chicago, head of the Division's Great Lakes sales district. He formerly was in charge of the St. Regis field promotion staff with headquarters in New York City.

At the same time announcement was made of the appointment of Howard C. Bryan as field engineer, representing the company in the Minnesota area. Mr. Bryan will also participate in bag sales activities.

Mr. Larigan joined the St. Regis sales promotion staff in 1946, and became head of the field promotion staff in April, 1949. His work with materials handling has brought him in close contact with most of the more than 400 industrial and agricultural products packaged by the St. Regis automatic filling machines in multiwall paper bags.

Mr. Bryan became associated with St. Regis Paper Company in 1946. He has handled sales and engineering both in the Denver and Minneapolis territories.

August Sulphate of Ammonia

There was a slight increase (about 5 per cent) in the production of by-product sulphate of ammonia in August over the preceding month, according to the figures of the U. S. Bureau of Mines. The output from purchased synthetic ammonia, however, showed a distinct increase. Shipments were somewhat less than production and the supply on hand increased to 34,212 tons by the end of August.

	Sulphate of Ammonia		
	From By-product Ammonia	*From Purchased Ammonia*	*Ammonia Liquor*
Production	*Tons*	*Tons*	*Tons NH_3*
Aug. 1949.....	67,183	5,151	1,905
July, 1949....	64,114	3,172	1,843
Aug. 1948.....	72,024	2,297	2,082
Jan.-Aug. 1949	561,966	32,982	16,242
Jan.-Aug. 1948	544,839	18,844	16,294
Shipments			
Aug. 1949.....	61,713	4,962	1,186
July, 1949....	57,562	3,187	1,126
Aug. 1948.....	72,875	2,297	1,893
Stocks on hand			
Aug. 31, 1949..	34,212	.....	938
July 31, 1949..	29,108	.....	919
Aug. 31, 1948..	30,152	.....	537

Mathieson Chemical Adds to Fertilizer Sales Staff

Mathieson Chemical Corporation has added W. W. Knight and P. F. Schowengerdt to its agricultural chemical sales staff, it has been announced by S. L. Nevins, Vice President, Director of Agricultural Chemical Sales. Mr. Knight has been named Sales Manager, Arkansas Fertilizer Company Division, and will have his headquarters in North Little Rock. Mr. Schowengerdt has been appointed Manager, Agricultural Chemical Sales, North Central Division, and will have his headquarters in St. Louis.

Mr. Knight comes to Mathieson after some thirty years in sales work on agricultural

products, and for the past sixteen years has been with the Temple Cotton Oil Company of North Little Rock, first as sales manager and then as general manager. He is a member of a number of associations in the field and has held office in the Valley Oil Seed Processors Association and the National Cottonseed Products Association.

Mr. Schowengerdt, before entering sales work, held various positions in agricultural development, from county agricultural agent in 1918 to Assistant to the General Agent, Farm Credit Administration, St. Louis, from 1940 to 1947. Prior to joining Mathieson, he was sales manager of a wholesale seed business. He is a member of Gamma Sigma Delta, honorary agricultural fraternity, and for the past ten years has been a director of the Commerce–Warren Co. Bank, Warrenton, Mo.

PHOSPHORUS AIDS HUMAN HEALTH

(Continued from page 9)

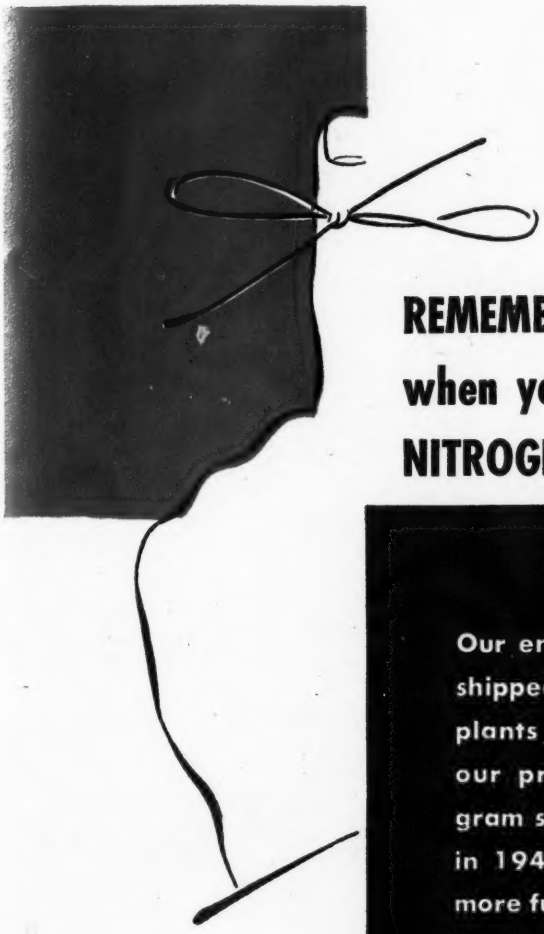
Vitamins

We hear much about vitamins these days. It is not generally known that vitamins as such are not in themselves an index of the quality of a food. If this were so, it might be logical to eat only germinated cereals, fertilized eggs, unripe potatoes and unripe fruit. Vitamins must be considered as the foundation stones of ferments or enzymes. For example, vitamins B_1 and B_2 are complex phosphate acid organic compounds. These two vitamins are usually present together in the majority of cases. In cereals B_1 is present in largest amount, whereas in meats, B_2 predominates. Thus we see again how vital a role phosphorus plays in proper nutrition.

Source

We have seen how widely distributed is phosphorus throughout the human organism, and how essential to the life processes. The ultimate source of all our phosphorus is the soil. For man the flow is from the soil to the plant foods, then either direct to the human organism from plants or indirectly by way of animal tissues consumed as food. Hence, we see why fertilization of the soil with inorganic phosphates is essential. It is also essential in bodies of water,—the sea, lakes, or rivers—where it serves as a nutrient to plant life and indirectly to fish and animal life. Where phosphorus is deficient in the soil or in bodies of water it may limit plant life and thereby animal and human life.

The really important end result of soil fertilization is the improvement or maintenance of health and vigor.



REMEMBER the name LION when you think of NITROGEN fertilizer products

Our entire production is being shipped exclusively to fertilizer plants in the deep South, and our present expansion program scheduled for completion in 1949—should enable us to more fully meet your needs for:

- **Nitrogen Solutions**
- **Sulphate of Ammonia**
- **Ammonium Nitrate Fertilizer**
- **Anhydrous Ammonia**

Chemical Division
LION OIL CO.
El Dorado, Arkansas

Technical service available to fertilizer manufacturers

LION

THE FERTILIZER SITUATION FOR 1949-50

(Continued from page 8)

were not significantly different on the respective dates. It appears that some 65,000 tons of P_2O_5 from stocks on hand July 1, 1948, were moved into the trade during the year.

The 1948–49 phosphate fertilizer supply by type and source of material is set out in (*Table 2*).

TABLE II
U.S. PHOSPHATE FERTILIZER SUPPLIES FOR 1948–49

Type and Source	*Tons Available Phosphoric Acid P_2O_5*
U. S. production	
Normal superphosphate	1,627,000
Concentrated superphosphate	224,000
Wet base goods	11,000
Other	[1] 143,000
Total	2,005,000
Imports	
Nitrogenous phosphatic material	16,000
Mixed fertilizers and other sources	9,000
Total	25,000
Total supply	2,030,000
Exports	
Normal superphosphate	94,000
Concentrated superphosphate	11,000
Nitrogenous phosphatic & mixed fertilizers	15,000
Total	120,000
Net supply U.S. and possessions	1,910,000

[1] Includes an estimated 78,000 tons available phosphoric acid (P_2O_5) contained in defluorinated phosphate, basic slag, byproduct phosphate, meta phosphate, liquid phosphoric acid, and ground phosphate rock and total phosphoric acid content of organic materials used for fertilizer, and approximately 65,000 tons available phosphoric acid (P_2O_5) represented by inventory change during the year.

The year 1948–49 saw installation or completion of equipment for large-scale increased capacity to mine and prepare phosphate rock and to manufacture processed phosphates, including concentrated superphosphates.

Supplies of phosphate fertilizer (available phosphoric acid basis) for domestic use during 1949–50 could readily exceed the indicated 1948–49 supply by 10 to 15 per cent. There is sufficient capacity for domestic mining and processing of 2,200,000 tons of available phosphoric acid (P_2O_5) or more for domestic use.

Potash (K_2O)

During the prewar years (1935–39) U.S. farmers were using an average of 375,000 tons of potash (K_2O content) each year. Approximately one-half of this quantity was represented by imported material. As has been the case for a number of years the 1948–49 potash supply for fertilizer purposes in the United States and possessions was obtained largely from domestic production. It is estimated U.S. production of soluble potash salts during 1948–49 for fertilizer purposes amounted to 1,040,000 tons K_2O. About 20,000 tons were derived from by-product and organic sources. Imports were about 22,000 tons and exports some 57,000 tons. The net supply for fertilizer usage during the year comprised approximately 1,025,000 tons K_2O.

The 1948–49 potash supply is classified as to type of material in (*Table 3.*)

TABLE III
U.S. FERTILIZER POTASH SUPPLY FOR 1948–49

Type of Material	*Tons K_2O*
Muriate of potash 60%	790,000
Muriate of potash 50%	72,000
Sulfate of potash and sulfate of potash magnesia	80,000
Manure salts	63,000
Organic and by-product sources	[1] 20,000
Total	1,025,000

[1] Includes potash content of oilseed meals, cottonhull ash, and byproduct residues utilized for fertilizer.

TABLE IV

PLANT FOOD CONSUMPTION IN CONTINENTAL UNITED STATES, HAWAII, AND PUERTO RICO, 1900 THROUGH 1947–48, WITH ESTIMATED SUPPLY FOR 1948–49

CONSUMPTION[1]

Period	*Nitrogen (N)*	*Available Phosphoric Acid (P_2O_5)*	*Potash (K_2O)*	*Total*	
	Tons	*Tons*	*Tons*	*Tons*	
1900	62,000	246,000	87,000	395,000	
1910	146,000	499,000	211,000	856,000	
1920	228,000	660,000	257,000	1,145,000	
1930	377,000	793,000	354,000	1,524,000	
1931	301,000	611,000	275,000	1,187,000	
1932	214,000	413,000	192,000	819,000	
1933	240,000	464,000	222,000	926,000	
1934	275,000	530,000	263,000	1,068,000	
1935	312,000	597,000	307,000	1,216,000	
1936	350,000	673,000	350,000	1,373,000	
1937	411,000	794,000	416,000	1,621,000	
1938	384,000	744,000	393,000	1,521,000	*Index*
1939	398,000	789,000	409,000	1,596,000	*(Per cent)*
1935–39 av.	371,000	719,000	375,000	1,465,000	100.00
1940	419,000	912,000	435,000	1,766,000	120.55
1941	458,000	994,000	467,000	1,919,000	131.00
1942	409,000	1,131,000	547,000	2,087,000	142.46
1943	509,000	1,237,000	643,000	2,389,000	163.18
1944	640,000	1,408,000	649,000	2,697,000	184.09
1944–45	630,000	1,354,000	729,000	2,713,000	185.19
1945–46	701,000	1,553,000	807,000	3,061,000	208.94
1946–47	784,000	1,736,000	858,000	3,378,000	230.58
1947–48	865,000	1,854,000	921,000	3,640,000	248.46

SUPPLY

1948–49[2]	1,005,000	1,910,000	1,025,000	3,940,000	268.94

[1] Plant food contained in commercial fertilizers. [2] Revised.

Exports of potash from the United States are confined chiefly to Western Hemisphere countries. During 1948–49 exports to Canada amounted to approximately 40,000 tons K_2O; to Cuba, 4,300 tons; to other Latin American countries, 12,300 tons; and to the Philippines, 400 tons. Imports during the past year were nominal, totalling about 22,000 tons K_2O.

Supplies of potash for U.S. farmers during 1949–50, based upon projected production rates of domestic sources and assuming imports and exports at recent levels, are estimated at some 1,150,000 tons K_2O. This figure could be exceeded, provided a substantial import movement developed.

Consumption of Plant Food in the United States

The plant food content of commercial fertilizers used in the United States and possessions by decades from 1910 through 1930 and annually from 1931 to date is shown in Table 4. The figures through 1947–48 are based on data supplied by the Bureau of Plant Industry, Soils, and Agricultural Engineering. The 1948–49 supply figures have been revised by the Production and Marketing Administration to reflect more complete information of performance during the year.

STATEMENT OF THE OWNERSHIP, MANAGEMENT CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

of THE AMERICAN FERTILIZER, published bi-weekly at Philadelphia, Pa., for October 1, 1949

STATE OF PENNSYLVANIA } ss.
COUNTY OF PHILADELPHIA }

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared A. A. Ware, who, having been duly sworn according to law, deposes and says that he is the editor of THE AMERICAN FERTILIZER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Name of	Post-office Address
Publisher, Ware Bros. Company,	317 N. Broad St., Phila., Pa.
Editor, A. A. Ware,	317 N. Broad St., Phila., Pa.
Managing Editor, None	
Business Manager, A. A. Ware,	317 N. Broad St., Phila., Pa.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Ware Bros. Company, 317 N. Broad St., Philadelphia, Pa.; S. L. Veitch, Penn Wynne, Pa.; A. A. Ware, Wayne, Pa.; Gertrude W. Case, Morristown, N. J.; A. W. McCall, Coronado, Cal.; K. F. Ware, Haddonfield, N. J.; G. L. Ware, Est., Haddonfield, N. J.; H. W. Ferkler, Cornelia, Ga.; T. K. Tomkins, North Hills, Pa.; G. F. Graeff, Est., Philadelphia, Pa.; John Owens, Philadelphia, Pa.; Florence B. Zintl, Woodbury, N. J.; Mary A. Jamison, Philadelphia, Pa.; Helen W. White, Glen Rock, N. J.; Elizabeth W. McCall, Ardmore, Pa.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

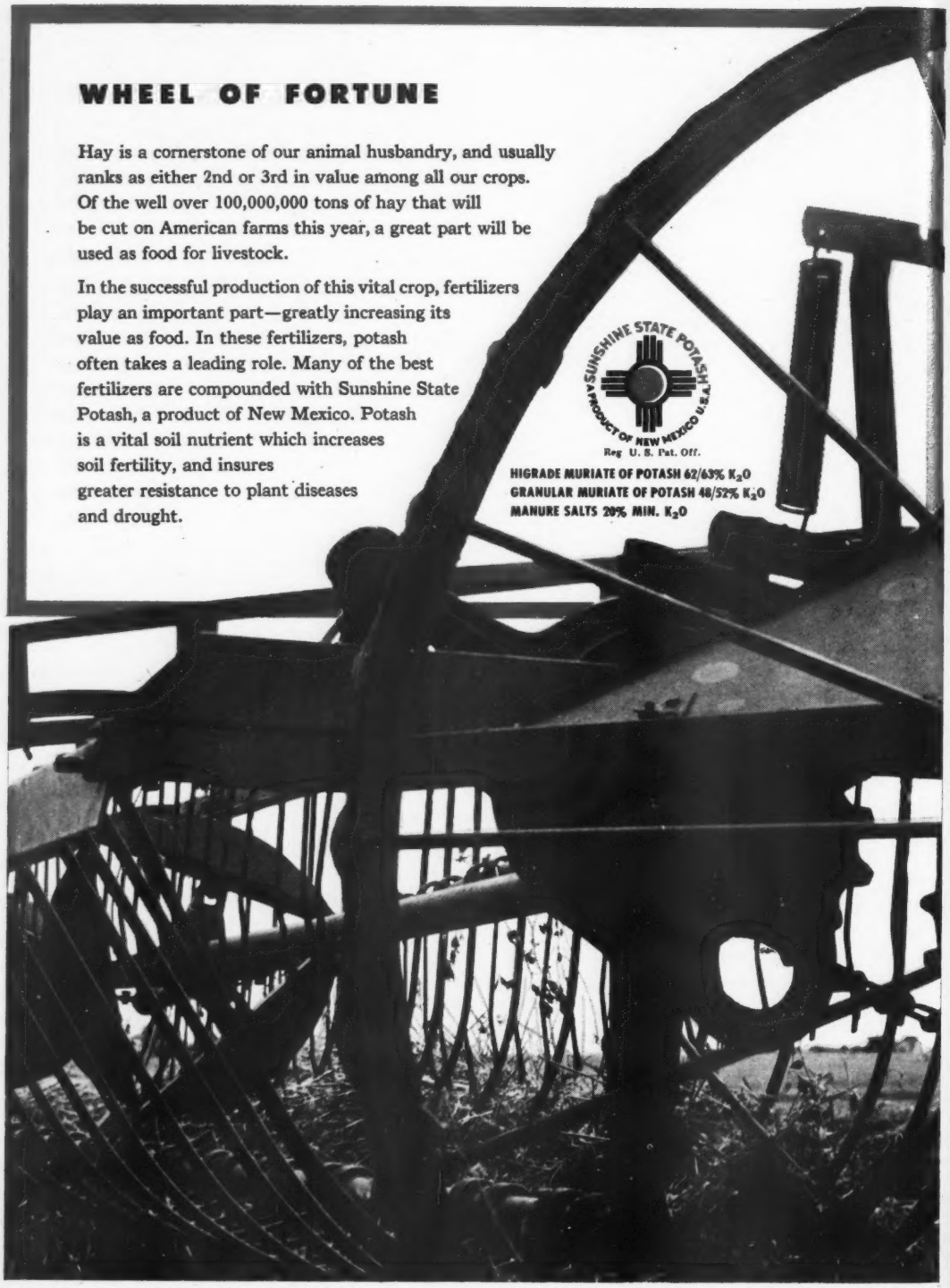
5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily, tri-weekly, semi-weekly and weekly publications only.)

A. A. WARE, Editor.

Sworn to and subscribed before me this 28th day of Sept., 1948

A. F. WALSH,
Notary Public.

(My commission expires March 5, 1953.)



WHEEL OF FORTUNE

Hay is a cornerstone of our animal husbandry, and usually ranks as either 2nd or 3rd in value among all our crops. Of the well over 100,000,000 tons of hay that will be cut on American farms this year, a great part will be used as food for livestock.

In the successful production of this vital crop, fertilizers play an important part—greatly increasing its value as food. In these fertilizers, potash often takes a leading role. Many of the best fertilizers are compounded with Sunshine State Potash, a product of New Mexico. Potash is a vital soil nutrient which increases soil fertility, and insures greater resistance to plant diseases and drought.

SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.
Reg U. S. Pat. Off.

HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 48/52% K_2O
MANURE SALTS 20% MIN. K_2O

UNITED STATES POTASH COMPANY, *Incorporated,* **30 Rockefeller Plaza, New York 20, N. Y.**

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Lion Oil Co. El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Lion Oil Co., El Dorado, Ark.
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Jaite Company, The, Jaite, Ohio
Kraft Bag Corporation, New York City
Raymond Bag Co., Middletown, Ohio
St. Regis Paper Co., New York City
Virginia Carolina Chemical Corp,. Richmond,Va.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Huber & Company, New York City
McIver & Son, Alex. M., Charleston, S. C

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International Paper Co., Bagpak Div., New York City
St. Regis Paper Co., New York City

BAG PRINTING MACHINES
Schmutz Mfg. Co., Louisville, Ky.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, The, East Point, Ga.
St. Regis Paper Co., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

BONE PRODUCTS—BONE BLACK
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Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
Jackle, Frank R., New York City
McIver & Son, Alex M., Charleston, S. C.
Scar-Lipman & Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City

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Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
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McIver & Son, Alex. M., Charleston, S. C.
Scar-Lipman & Co., New York City
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BUCKETS—For Hoists, Cranes, etc.
Hayward Company, The, New York City

BUCKETS—Elevator
Baughman Manufacturing Co., Jerseyville, Ill.
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Stedman's Foundry and Mach. Works, Aurora, Ind.

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Stedman's Foundry and Mach. Works, Aurora, Ind.

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Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Commercial Solvents Corp., New York City
Davison Chemical Corporation, Baltimore, Md.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Phillips Chemical Co., Bartlesville, Okla.
Scar-Lipman & Co., New York City
Spencer Chemical Co., Kansas City, Mo.
Virginia-Carolina Chemical Corp., Richmond,Va.
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Shuey & Company, Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

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Jackle, Frank R., New York City
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Jackle, Frank R., New York City
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Scar-Lipman & Co., New York City
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McIver & Son, Alex. M., Charleston, S. C.
Scar-Lipman & Co., New York City
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FOUNDERS AND MACHINISTS
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Machine Works, Aurora, Ind.

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

HOPPERS
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Sackett & Sons Co., The A. J., Baltimore ,Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

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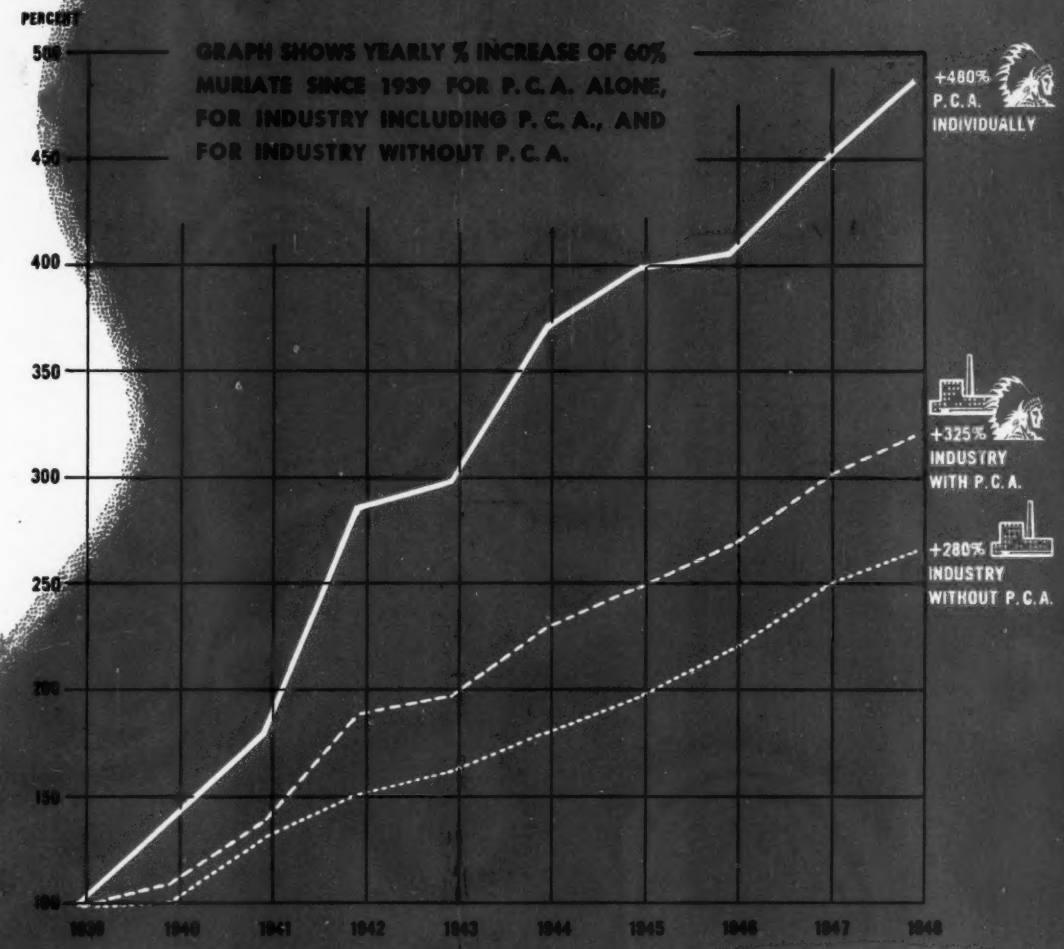

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